A FLASH MCU SOLUTION

68HC908JB16

8-bit Microcontroller

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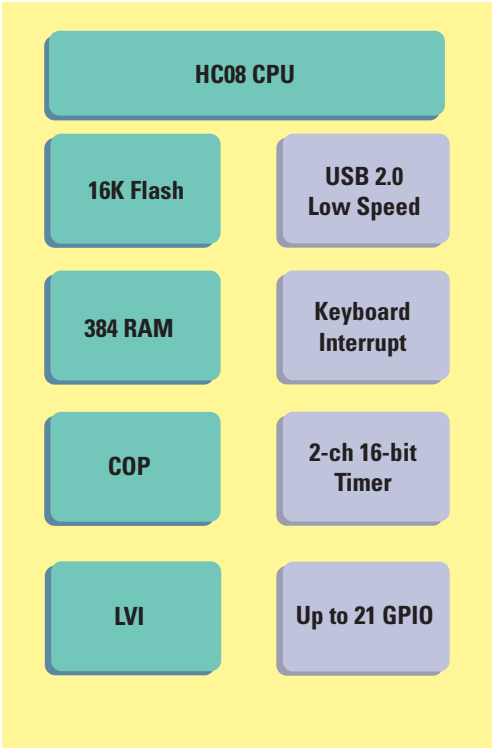
TARGET APPLICATIONS

- PC peripherals (keyboard, mouse)
- USB converters
- RF wireless receivers
- USB security keys for e-commerce
- Set-top box peripherals

The 68HC908JB16 is an upwardly compatible, versatile migration from Motorola's 68HC908JB8 universal serial bus (USB) microcontroller unit (MCU). The innovative design features an on-chip USB module for fast, reliable PC peripheral applications, and dual 27 MHz clock generators. An energy-saving, low-power solution, the 68HC908JB16 is embedded with 16 Kbytes of Motorola's second-generation FLASH technology to enable in-system programmability.



FEATURES	BENEFITS

HIGH-PERFORMANCE 68HC08 CPU CORE

- 6 MHz bus operation at 4 to 5.5V operation for 167 nsec minimum instruction cycle time
- Efficient instruction set including multiply and divide
- 16 flexible addressing modes including stack relative with 16-bit stack pointer
- Fully static low-voltage, low-power design with wait and stop modes
- Object code compatible with the 68HC05
- Easy-to-learn, easy-to-use architecture
- C optimized architecture provides compact code

16K BYTES INTEGRATED SECOND-GENERATION 0.35µ FLASH MEMORY

- In-application re-programmable
- Extremely fast programming, encoding 64 bytes in as fast as 32 µsec per byte
- FLASH programming across the 68HC08 device's full operating supply voltage with no extra programming voltage
- 10K write/erase cycles minimum over temperature
- Flexible block protection and security
- Cost-effective programming changes and field software upgrades via in-application programmability and re-programmability
- Helps to reduce production programming costs through ultra-fast programming
- Byte-writable for data as well as program memory
- Helps protect code from unauthorized reading and guards against unintentional erasing/writing of user-programmable segments of code

USB 2.0 SPECIFICATION LOW-SPEED FUNCTIONS

- 1.5 Mbps data rate
- On-chip 3.3V regulator
- Endpoint 0 with 8-byte transmit buffer and 8-byte receive buffer
- Endpoint 1 with 8-byte transmit buffer
- Endpoint 2 with 8-byte transmit buffer and 8-byte receive buffer
- Designed to serve as low-speed (LS) USB device, in accordance with Universal Serial Bus Specification Rev. 2.0 Low-Speed Functions
- Integrated 3.3V regulator helps to reduce system cost

DUAL 27 MHZ PHASE-LOCKED LOOPS

- Two programmable 27 MHz PLLs
- Reference frequency from MCU input clock: 12 MHz crystal
- Provides two independent, high-performance 27 MHz clocks for RF applications

TWO PROGRAMMABLE 16-BIT TIMERS, EACH WITH TWO CHANNELS

- 167 nsec resolution at 6 MHz bus
- Free-running counter or modulo up-counter
- External clock input option
- Each channel independently programmable for input capture, output compare or unbuffered PWM
- Pairing timer channels designed for a buffered PWM function

SERIAL COMMUNICATIONS INTERFACE

- UART asynchronous communications system
- Flexible baud rate generator
- Double buffered transmit and receive
- Optional hardware parity checking and generation
- Designed to enable asynchronous serial communications with peripheral devices

Freescale Semiconductor, Inc.

A FLASH MCU SOLUTION

68HC908JB16

PART NUMBER	DESCRIPTION	RESALE*
EASY-TO-ORDER DEVELOPMENT TOOL KITS		
M68ICS08JBJG	Programmer/in-circuit debug kit	$295
KITMMEVS08JBJG	Cost-effective real-time in-circuit emulator kit	$1450
KITMMDS08JBJG	High-performance real-time in-circuit emulator kit	$3950
INDIVIDUAL DEVELOPMENT TOOL COMPONENTS		
M68MMDS0508	High-performance emulator	$2950
M68MMPFB0508	MMEVS platform board	$395
M68EM08JBJG	Emulation module daughter board	$495
M68CBL05C	Low-noise flex-cable	$120
M68TC08JB16FA32	32-pin LQFP target head adapter	$200
M68TC08JB16P28	28-pin DIP target head adapter	$100
M68DIP28SOIC	28-pin surface mount adapter	$50

APPLICATION NOTES

- AN2093/D Creating Efficient C Code for the HC08
- AN1219/D M68HC08 Integer Math Routines
- AN1218/D HC05 to HC08 Optimization
- AN1837/D Non-Volatile Memory Technology Review
- AN1752/D Data Structures for 8-Bit MCUs
- AN1705/D Noise Reduction Techniques for MCU-Based Systems

And many more—see our Web site at http://www.motorola.com/mcu

FEATURES	BENEFITS
COMPUTER OPERATING PROPERLY WATCHDOG TIMER	
	• Issues reset in the event of runaway code
SELECTABLE TRIP POINT LOW-VOLTAGE INHIBIT	
	• Improves reliability by resetting the MCU when voltage drops below trip point • Integration helps to reduce system cost
UP TO 21 BIDIRECTIONAL INPUT/OUTPUT (I/O) LINES	
• 10 mA high-current drive for PS/2 connection on two pins (with USB module disabled) • One dedicated I/O pin, with 25 mA direct drive for infrared LED (32-pin package) • Six dedicated I/O pins, with 25 mA direct drive for infrared LED on two pins and 10 mA direct drive for normal LED on four pins (28-pin package) • Keyboard scan with selectable interrupts on eight I/O pins	• High current I/O designed to allow direct drive of LED and other circuits to eliminate external drivers and help to reduce system costs • Keyboard scan with programmable pull-ups virtually eliminates external glue logic when interfacing to simple keypads

PACKAGE OPTIONS

PART NUMBER	PACKAGE	TEMPERATURE RANGE
MC68HC908JB16FA	32 LQFP	0 to 70°C
MC68HC908JB16DW	28 SOIC	0 to 70°C
SAMPLE PACKS	**PACKAGE**	**TEMPERATURE RANGE**
KMC908JB16FA	32 LQFP	0 to 70°C
KMC908JB16DW	28 SOIC	0 to 70°C

* All prices are manufacturer's suggested resale for North America.

32-Pin LQFP

28-Pin SOIC

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68HC908JB16FS/D
REV 0

For More Information On This Product,
Go to: www.freescale.com

Freescale Semiconductor, Inc.